

REMARKS

Upon entry of this amendment, claims 1, 3 and 4 are all the claims pending in the application. Claim 2 has been canceled by this amendment.

I. Objection to the Drawings

The Examiner has objected to the drawings for the reasons set forth on page 2 of the Office Action. In particular, Figs. 1, 3 and 5 have been objected to because the Examiner asserts that these figures do not show multiple inverting inputs to the subtracter as disclosed. In response, Applicants respectfully note that the specification does not disclose multiple inverting inputs to a subtracter.

For example, regarding Fig. 1, the specification discloses that a signal is delivered to the subtracter 6 via a high-pass filter 7 (see page 6, lines 8-9 of the specification). Regarding Fig. 3, Applicants note that the specification indicates that signals are delivered to the subtracter 6 via a pair of high-pass filters 7 and 8 (see page 7, lines 17-20 of the specification), and regarding Fig. 5, Applicants note that the specification indicates that signals are delivered to the subtracter 6 via a high pass filter 7 and a low pass filter 9 (see page 9, lines 6-10 of the specification).

In view of the foregoing, Applicants respectfully submit that while the specification discloses that signals can be delivered to the subtracter 6 via one or more filters, that there is no description in the specification of multiple inverting inputs to the subtracter 6, as suggested by the Examiner. Accordingly, Applicants respectfully submit that Figs. 1, 3 and 5 accurately depict the disclosure set forth in the specification and, therefore, kindly request that the objection to the drawings be reconsidered and withdrawn.

II. Objection to the Specification

The Examiner has objected to the specification for the reasons set forth on page 3 of the Office Action. Applicants have amended the title and specification in a manner to address the Examiner's objections. Regarding the phrases "secondary high-pass filter", "primary low-pass filter" and "secondary low-pass filter", Applicants note that these phrases have been replaced in the claims by the phrases "-12 dB/oct. high-pass filter", "-6 dB/oct. low-pass filter" and "-12 dB/oct. low-pass filter", respectively.

Applicants note that the specification also includes editorial amendments that have been made for grammatical and general readability purposes. Due to the number of changes made, a substitute specification and abstract are submitted herewith. No new matter has been added. Also enclosed is a marked-up copy of the original specification and abstract showing the changes incorporated into the substitute specification and abstract.

Based on the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the objections to the specification.

III. Claim Rejections under 35 U.S.C. § 103(a)

A. The Examiner has rejected claims 1 and 2 under 35 U.S.C. § 103(a) as being unpatentable over Konno et al. (US 6,122,385) in view of Matsushita (JP 7-16299).

Claim 1, as amended, recites that a cutoff frequency of the high-pass filter is matched with a resonance frequency of the acoustic pipe. Applicants respectfully submit

that the combination of Konno and Matsushita does not teach or suggest at least this feature of claim 1.

Regarding Konno, Applicants note that this reference discloses a sound reproduction apparatus having a subtracter 10, a power amplifier 11, a speaker 13, a microphone 14, a microphone amplifier 15, a filter 16 and an adder 17 (see Fig. 1). As disclosed in Konno, the cutoff frequency of the filter 16 is coincided with the lowest resonant frequency of the speaker 13 (see col. 4, lines 47-49 and Fig. 3).

In the Office Action, the Examiner asserts that Konno discloses that the cutoff frequency is matched with the resonance frequency (see item 8 on page 4 of the Office Action). Applicants note, however, that claim 1 does not recite that the cutoff frequency of the high-pass filter is matched with the resonance frequency of the speaker 13. Instead, claim 1 recites that the cutoff frequency of the high-pass filter is matched with the resonance frequency of the acoustic pipe.

Accordingly, while Konno discloses that the cutoff frequency of the high-pass filter 16 is matched with the lowest resonance frequency of the speaker 13, Applicants respectfully submit that such disclosure does not suggest that the cutoff frequency of the high-pass filter should be matched with the resonance frequency of an acoustic pipe, as recited in claim 1.

Regarding Matsushita, Applicants note that this reference discloses a sound reproduction device that includes an acoustic pipe 2 (see Abstract). Applicants respectfully point out, however, than in Matsushita, the problem of pipe resonance is addressed by providing a sound absorption material 3 in the acoustic pipe 2. In particular, in paragraph [0010] of Matsushita, it is explicitly disclosed that “both sides of

the acoustic pipe 2 are provided with sound absorption material 3 to suppress a resonance of pipe 2” (see lines 6-8 of paragraph [0010]).

Accordingly, in Matsushita, the sound absorption material 3 within the acoustic pipe 2 is responsible for suppressing a resonance of the acoustic pipe. Accordingly, even if one of ordinary skill in the art were to combine Konno with Matsushita, the problem of the resonance of the acoustic pipe would be addressed by the sound absorption material 3, as taught by Matsushita.

Based on the foregoing description, Applicants respectfully submit that even if Konno and Matsushita were combined, there would be no motivation to provide the cutoff frequency of a high pass filter that is matched with a resonance frequency of the acoustic pipe, as recited in amended claim 1.

In view of the foregoing, Applicants respectfully submit that the combination of Konno and Matsushita does not disclose, suggest or otherwise render obvious all of the features recited in amended claim 1. Accordingly, Applicants submit that claim 1 is patentable over the cited prior art, an indication of which is kindly requested. As noted above, claim 2 has been canceled.

B. The Examiner has rejected claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over Konno et al. in view of Meyers (US 3,798,374) and Matsushita.

Regarding claims 3 and 4, Applicants note that each of these claims has been amended in a similar manner as discussed above with respect to claim 1. For example, claims 3 and 4 have been amended so as to recite that a cutoff frequency of the -12 dB/oct high-pass filter is matched with a resonance frequency of the acoustic pipe.

For at least similar reasons as discussed above with respect to claim 1, Applicants respectfully submit that the combination of Konno and Matsushita does not disclose or suggest such a feature. In addition, Applicants respectfully submit that Meyers does not cure this deficiency of Konno and Matsushita. Accordingly, Applicants respectfully submit that claims 3 and 4 are patentable over the cited prior art, an indication of which is kindly requested.

Further, regarding claim 3, Applicants note that this claim has been amended to recite that a negative feedback circuit is formed by connecting an acoustic output signal of the microphone amplifier to the subtracter via a -6 dB/oct. high-pass filter and a -12 dB/oct. high-pass filter connected in parallel.

In the Office Action, the Examiner asserts that Fig. 1 of Meyers depicts a primary high-pass filter C73 that is connected in parallel with a secondary high pass filter R72 and C74. Applicants respectfully disagree.

In particular, Applicants note capacitors C73, C74 and resistors R71 and R72 are disclosed in Meyers as forming an equalizer circuit 70 (see Fig. 1 and col. 4, lines 54-62). As explained in Meyers, R71 and C73 in combination substantially provides the ideal characteristics of Fig. 3, and R72 and C74 in combination are added to modify these characteristics (see col. 4, lines 56-62). Thus, in Meyers, the combination of these four elements (i.e., C73, C74, R71 and R72) function as an equalizer.

Based on the foregoing description of Meyers, Applicants respectfully submit that while the combination of elements C73, C74, R71 and R72 forms an equalizer circuit 70, that this combination of elements does not correspond to a first high-pass filter connected in parallel with a second high-pass filter.

In other words, while individual elements of the equalizer circuit 70 may be connected in parallel, it is the combination of elements that forms the equalizer circuit 70, and therefore, it is clear that such a circuit does not include a first high-pass filter connected in a parallel with a second high-pass filter. As such, Applicants respectfully submit that Meyers does not disclose or suggest the feature of a negative feedback circuit that is formed by connecting an acoustic output signal of the microphone amplifier to the subtracter via a -6 dB/oct. high-pass filter and a -12 dB/oct. high-pass filter connected in parallel, as recited in amended claim 3.

Further, regarding claim 4, Applicants note that this claim has been amended to recite that a negative feedback circuit is formed by connecting an acoustic output signal of the microphone amplifier to the subtracter via a -12 dB/oct. high-pass filter connected in parallel with one of -6 dB/oct. low-pass filter and a -12 dB/oct. low-pass filter. For at least similar reasons as discussed above with respect to claim 3, Applicants respectfully submit that Meyers does not disclose, suggest or otherwise render obvious such a feature.

Accordingly, Applicants respectfully submit that claim 4 is patentable over the combination of Konno, Matsushita and Meyers, an indication of which is kindly requested.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may best be resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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